Claims:

1. Analysis apparatus comprising a main body part and a cartridge part:

the main body part being adapted for positioning in a fluid to be analyzed and including analysis or processing means; and

the cartridge part including means for extracting a sample from the fluid; means for storing at least one reagent and means for transferring the sample and the at least one reagent to the analysis means so as to permit analysis of the sample, or for transferring data resulting from analysis of the sample within the cartridge to the processing means.

2. Apparatus according to Claim 1 wherein said means for transferring the sample and the at least one reagent to the analysis means comprises an associated needle portion and said main body part further comprises a corresponding needle receiving portion and an associated communication pathway to the analysis means.

3. Apparatus according to Claim 2 wherein said first portion further comprises a baseplate having a resealable aperture, said baseplate being movable between a non-mated position where said needle portion is covered by the seal of said resealable aperture and a mated position where said first and second parts are mated together and where said needle penetrates through said resealable aperture.

4. Apparatus according to Claim 3 further comprising means for preventing said baseplate moving between the mated position and the non-mated position unless said first and second means are at least partially mated.

5. Apparatus according to Claim 1 wherein each of said means for storing at least one reagent comprises a flexible bag for each of said reagents.

6. Apparatus according to Claim 5 wherein said second portion further comprises a chamber for the storage of water and wherein said flexible bags are situated within said chamber.

7. Apparatus according to Claim 6 wherein said chamber comprises means for maintaining the water within the storage chamber at a predetermined level.

8. Apparatus according to Claim 6 wherein said main unit part further comprises means for passing waste to said cartridge part and said cartridge part is adapted to discharge the waste into the water storing chamber.

9. Apparatus according to Claim 1 wherein said main unit part comprises heating means and means for the thermal transfer to the output of said heating means to an thermal interface with the cartridge means and wherein said cartridge part comprises thermal interface means and means for providing a thermal pathway to a thermally conductive material surrounding at least one of the reagent storing means so as to maintain the reagent at a predetermined temperature.

10. Apparatus according to Claim 9 wherein said heating means is adapted to cool the reagent.

11. Apparatus according to Claim 1 wherein said main unit further comprises a microprocessor for controlling the analysis means and receiving data indicative of the results of said analysis and said cartridge part further comprises non-volatile memory for storing said results data.

12. Apparatus according to Claim 1 wherein said cartridge part further comprises analysis means.

13. Apparatus according to Claim 12 wherein said analysis means

provided in said cartridge part comprises a biological oxygen sensor.

14. Apparatus according to Claim 12 wherein said main body part further comprises means for directing a sample to the analysis unit of the cartridge part.

15. Apparatus according to Claim 1 wherein said cartridge part further comprises means for reducing the content of dissolved air in the sample.

16. Apparatus according to Claim 15 wherein said means for reducing the content of dissolved air in the sample comprises an upwardly vertically extending input pipe the upper end of which is vented to the atmosphere and a downwardly angled output pipe in fluid communication with said input pipe.

17. Apparatus according to Claim 16 further comprising a heater in the region of the connection between said input pipe and said output pipe.

18. Apparatus comprising a main body part and a cartridge part which, in use, are mated wherein:

said main body part is adapted for positioning in a fluid to be analyzed and includes analysis means; and

said cartridge part comprises means for extracting a sample from the fluid;

wherein said apparatus comprises means for transferring the sample from said extraction means to said analysis means so as to permit analysis of the sample, said means comprising a needle situated on the cartridge part and corresponding needle receiving means situated on the main body part.

19. Apparatus according to Claim 18 wherein said cartridge part further comprises a baseplate having a resealable aperture, said baseplate being movable between a non-mated position where said needle portion is covered

by the seal of said resealable aperture and a mated position where said main body part and said cartridge part are mated together and where said needle penetrates through said resealable aperture.

20. Apparatus according to Claim 19 further providing means for preventing the penetration of said needle through said aperture until said cartridge part and said main body part are at least partially mated together.

21. Apparatus according to Claim 18 wherein interfacing portions of said cartridge part and said main body part are keyed.

22. Apparatus according to Claim 1 wherein said main body part further comprises a rotational motor and associated coupling means and said cartridge part comprises a pump adapted to be driven by said rotational motor via said coupling means, said pump being adapted to extract a sample from the fluid.

23. An analysis device comprising a main body part and a cartridge part which, in use, are mated wherein:

said main body part is adapted for positioning in a fluid to be analyzed and includes analysis means; and

said cartridge part comprises means for the storage of waste material after analysis and wherein

said device comprises means for transferring the waste from said analysis means to said storage means.

24. An analysis device according to Claim 23 wherein said means for transferring the waste from said analysis means to said storage means comprises a needle situate on the cartridge part and corresponding needle receiving means situated on the main body part.

25. An analysis buoy comprising a main body part and a cartridge part

which, in use, are mated wherein:

said main body part is adapted for positioning in a fluid to be analyzed; and

said cartridge part comprises means for analyzing said fluid.

26. An analysis buoy according to Claim 25 wherein said means for analyzing said fluid comprises a biological oxygen sensor.

27. A cartridge for an analysis buoy having the cartridge part features as set out in Claim 1.

28. A main body for an analysis buoy having the main body means features as set out in Claim 1.

29. A method of replenishing a cartridge of the type set out in Claim 1 comprising the steps of:

pumping the air from the reagent bag so as to create a vacuum therein; and

pumping the desired reagent into said reagent bag.

30. Apparatus according to Claim 1, wherein liquid to be analysed is contained within the cartridge and wherein the interface between the main body part and the cartridge passes no liquid.

31. Apparatus according to Claim 30, wherein the interface comprises means for transferring electrical power and/or means for transferring mechanical power between the cartridge and the main body part.

32. Apparatus according to Claim 30, wherein the interface comprises means for transferring data to or from the cartridge.

33. An analysis device for analyzing a fluid comprising means for

extracting a sample from the fluid, wherein the device comprises a buoy having onboard means for analyzing the fluid and means for communicating the results of the analysis to a remote location, the buoyancy of the buoy being such that the means for extracting a sample from the fluid is maintained substantially at a constant depth with respect to the fluid.

34. An analysis device comprising a main body part arranged to be positioned within a fluid to be analysed and having a removable cartridge arranged to interface with the main body part, the cartridge containing components for analysing the fluid, the main body part having means for controlling analysis of the fluid, the cartridge containing at least one consumable substance for use in the analysis.

35. A cartridge for use in an analysis device for analysing a fluid, the cartridge containing at least one consumable substance and means for bringing the substance into contact with the fluid, and interface means for communicating with a main body part with which the cartridge is arranged to mate and which main body part has means for controlling analysis.

36. An analysis device arranged for positioning in a fluid, the device comprising means for receiving a cartridge containing at least one consumable substance, means for controlling analysis of the fluid and means for signalling the results of analysis to a remote location.

37. An analysis buoy substantially as any one set out herein with reference to or in accordance with the accompanying drawings.

38. A cartridge for an analysis device substantially as set out herein with reference to or in accordance with the accompanying drawings.

39. A method of analysing a fluid using an analysis device, the method being substantially as set out herein with reference to or in accordance with

the accompanying drawings.